

International migration data for Northern Ireland: quality assurance of administrative data used in population statistics, Jan 2017

Quality assurance undertaken on administrative data for international migration data for Northern Ireland used within Population Statistics Division (PSD) publications.

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1 . Introduction

The Population Statistics Division (PSD) within the Office for National Statistics (ONS) receives international migration data for the devolved administration of Northern Ireland from the Northern Ireland Statistics and Research Agency (NISRA).

International migration data is fundamental to a number of ONS publications including but not limited to national population projections (NPP), Long-Term International Migration estimates (LTIM) and the Mid-Year Population Estimates (MYE).

Within PSD, international migration data for Northern Ireland were assessed separately by relevant teams using [the UK Statistics Authority's Quality Assurance of Administrative Data Toolkit](#), which assesses an administrative data source in terms of the risk to data quality and its onward use in statistics as well as the profile of the statistics produced from the source. The results of those assessments are an A1 rating.

The A1 rating means that a basic level of assurance is required for these sources and this report will provide information to meet this level of assurance. If you feel that this report does not adequately provide this assurance then please contact pop.info@ons.gsi.gov.uk with your concerns.

The toolkit outlines 4 areas for assurance; the rest of this report will be split into these areas. The areas for assurance are:

- operational context and administrative data collection
- communication with data supply partners
- quality assurance principles, standards and checks applied by data suppliers
- producer's quality assurance investigations and documentation

2 . Operational context and administrative data collection

Northern Ireland international migration estimates are produced primarily using medical card register data.

In order to gain access to GP services in Northern Ireland, a person must first register with a GP practice. All such registrations are recorded on the medical card register, which documents information including but not limited to the person's sex, date of birth, current address and date of registration, deregistration or re-registration.

The National Health Applications and Infrastructure Services (NHAIS) links to all GP practices in Northern Ireland. It is a register of all persons currently or previously registered for primary care health services in Northern Ireland.

International migration flows are estimated using new registrations or re-registrations records for inflows and deregistration for outflows.

Medical card register data is collected by the Business Services Organisation (BSO) and provided to the Northern Ireland Statistics and Research Agency (NISRA) for the production of official statistics. The data are taken from the NHAIS.

NISRA statisticians within BSO carry out data cleaning and validation checks.

A service level agreement is in place between NISRA and BSO in which BSO agrees to supply NISRA with the following data every quarter:

- unit record data: record level list of all persons on the medical card register (whether living, dead or gone away)
- counts data: control total counts of additions or exits from the medical card register

NISRA receive unit record data from BSO every quarter, which is subsequently converted into 2 parts: flow data and stock data.

Flow data contain information on moves, arrivals to and departures from Northern Ireland and stock data provide information on the numbers of people by sex, age and area. The flow data forms the basis for estimates of international migration.

Detailed quality information regarding the medical card register is covered in a separate quality assurance of administrative data report being published by us and in NISRA's own [quality assurance report](#).

3 . Communication with data supply partners

Population Estimates Unit (PEU)

PEU has no formal agreement with the Northern Ireland Statistics and Research Agency (NISRA) for the supply of data, though supply is implied by the Office for National Statistics's (ONS) agreed role of publishing the UK population estimates; regular contact between appropriate teams in ONS and NISRA is maintained throughout the year. NISRA publish their mid-year estimates for Northern Ireland on the same day as PEU publish mid-year population estimates (MYE) for the UK. A formal request for data is sent from PEU to NISRA well in advance of the MYE publication date, allowing PEU sufficient time to incorporate Northern Ireland migration data for the production of MYEs and ensures a timely publication.

Should there be a delay in the supply of data, the 2 organisations will negotiate for the data to be supplied as soon as possible and attempt to minimise disruptions to either party's publication schedule.

NISRA supply PEU with historical components of change alongside the most recent available data in a spreadsheet.

The data are supplied as aggregated estimates by Northern Ireland local government districts and at the national level. International immigration, emigration and net migration are available within the supplied table as separate components of change.

Population Projections Unit (PPU)

ONS is currently commissioned, through a formal agreement, to prepare and produce principal and variant National Population Projections (NPP) on behalf of the devolved administrations of Northern Ireland, Scotland and Wales.

Under this agreement, the devolved administrations, including Northern Ireland, supply the data required for the production of NPPs: this includes the latest available migration data at the time of request. Formal requests for data are sent by PPU to request data for years when the NPP are due to be published.

ONS and NISRA engage in regular discussion on the progress of work and data requirements. Additionally, in an NPP publication year, an initial NPP committee meeting is held in January where ONS will outline their intended progress and provide NISRA with a timetable of events. Data requirements are discussed in this meeting and a guide date for NISRA to provide ONS with Northern Ireland international migration data is set. A formal data request is sent after this initial meeting. In July of the same year, a second committee meeting takes place during which ONS and NISRA discuss the agreed assumptions for international migration.

The data PPU receive from NISRA is provided as a spreadsheet containing international migration estimates to and from Northern Ireland by sex and single year of age

Migration Statistics Unit (MSU)

There is a Memorandum of Understanding (MoU) between MSU and NISRA for the provision of Northern Ireland international migration estimates.

MSU receive data from NISRA on a quarterly basis in a spreadsheet. The data contain aggregated immigration and emigration estimates for Northern Ireland by the following variables:

- country of last residence, for immigration only (grouped by EU15, EU8, EU2, Malta and Cyprus, Commonwealth and the rest)
- reason for migration, for immigration only (by the categories of Work, Family, Education and Other)
- age and sex, for both immigration and emigration (by sex and the age groups of 0 to 14, 15 to 24, 25 to 44, 45 to 59, 60 to 64 and 65 and over)

Annual checkpoint meetings are held in January each year to discuss progress, issues and risks and to update the MoU as required. MSU is responsible for initiating proceedings to arrange the date, time and place of this meeting.

Should it become necessary for either party to alter their requirements outside of the agreed management arrangements, communication can be initiated by either party, a reasonable timetable to accommodate the requests will then be set and agreed by both parties.

3.1 Engagement with users

PSD continually engages with users, through a variety of means, to understand how our outputs are meeting their requirements. Feedback provided tends to relate to the overall statistical methodology and the impact on the final statistics, rather than to any individual data source. To date no specific feedback on the use of this data source has been provided.

4 . Quality assurance principles, standards and checks applied by data suppliers

The international migration estimates data received by the Office for National Statistics (ONS) are identical to those published by the Northern Ireland Statistics and Research Agency (NISRA) as part of their own international migration estimates. The data used to compile NISRA's international migration estimates are received from the Business Services Organisation (BSO).

Quality assurance of BSO data is undertaken by statisticians of population statistics within NISRA. The quality assurance process involves a number of data consistency and validation checks including:

- identification and removal of duplicated records
- identification and imputation of missing data
- clean-up of geographic information
- checks for conflicting records

If issues are discovered during quality assurance, NISRA will communicate with their data supplier and agree any decisions to the amendments or adjustments the data may require. No changes will be made before an agreement is reached.

BSO carry out auditing on their administrative data before providing them to NISRA. BSO states that for most of the data extracted from the National Health Applications and Infrastructure Services (NHAIS), the following validation steps are completed:

- checking consistency (over time and between variables) and reliability of the data
- analysis of trends
- checking that values fall within acceptable ranges
- assurance from subject matter experts

For additional information on NISRA's quality assurance of international migration data, please see [Administrative Data Quality Document – Population Estimates and Projections for Northern Ireland](#) and [Business Services Organisation, Information and Registration Unit – Statement of Administrative Sources](#) used for statistical purposes.

5 . Producer's quality assurance investigations and documentation

Population Estimates Unit (PEU)

Northern Ireland international migration data are used by PEU in the production of the mid-year population estimates (MYE) as well as the MYE3 and MYEB3 component of change tables.

The data are published as [National Statistics](#) by the Northern Ireland Statistics and Research Agency (NISRA) and PEU are using them for the same purpose for which they are accredited. PEU are satisfied that the data has already undergone multiple stages of quality assurance at the time of supply. Therefore, no further quality assurance is necessary beyond simple checks.

PEU examines the data supplied by NISRA for any unexplained inconsistencies, checks are made to ensure the historical data supplied have not changed since the previous data supply and the latest data are checked to ensure there are no unexplained and significant differences compared with historical data. Should any issues with the data be identified, PEU will contact NISRA, communicate the finding and investigate the cause of the discrepancy.

Population Projections Unit (PPU)

The PPU uses Northern Ireland international migration data from NISRA to set Northern Ireland migration assumptions as well as Northern Ireland sex and age distribution for the National Population Projections (NPP).

The data supplied by NISRA are identical to those published in their own international migration estimates.

Simple checks are carried out on the data by PPU for consistency, by comparing the latest received data with previously received data. Migration figures are also checked to ensure that there are no unexplainable trends. The nature of international migration data means significant differences are to be expected in relation to political developments, for example, a significant increase in working-aged migrants following the removal of work restrictions would not be judged to be a cause for concern as there was a clear cause for the observed trends. However, if significant increases were observed in only those over pension age, for example, NISRA would be contacted for an explanation and the data would be further scrutinised for potential errors.

Output data from the NPP are further checked for consistency against previous projections. The international migration component of change is checked against previous NPP outputs to ensure there are no unexplained trends in the projection. Should an anomaly be found, a further check will be conducted to identify the cause.

Migration Statistics Unit (MSU)

Northern Ireland international migration data supplied by NISRA are used as the Northern Ireland component during the production of Long-Term International Migration estimates (LTIM).

The data contained in the spreadsheets received by MSU are identical to data published in NISRA's own international migration estimates. The source data are accredited National Statistics and are fully quality assured at the time of supply, therefore MSU are satisfied no further quality assurance is necessary beyond simple checks.

The quality assurance process starts with figures being checked for consistency, ensuring that the sum for all countries of last residence matches the total figure given by NISRA and that the sum of quarterly data matches the annual totals. The sum of immigration derived is then compared between tables to ensure they do not differ.

There is a final check for consistency at the end of the quality assurance process; quarterly data is compared with the same quarter of the previous year and where appropriate, forecast data is compared with provisional data and provisional data is compared with final data to ensure there are no unexplained differences.

Although it is rare, should an issue be found at any stage during the quality assurance process, MSU will immediately contact NISRA to discuss the issues identified.

6 . Conclusions

6.1 Assurance ratings

Population Estimates Unit (PEU)

PEU use Northern Ireland international migration estimates for the production of the UK mid-year population estimates (MYE) and the components of change tables.

The data are accredited National Statistics and fully quality assured at the time of supply. Given the low number of variables, the regular communication maintained between colleagues in the Office for National Statistics (ONS) and the Northern Ireland Statistics and Research Agency (NISRA) in regards to data needs and quality and the fact that PEU use the data for the same purpose for which they have been accredited as National Statistics, there is deemed to be a low risk of quality concerns.

MYEs are produced on an annual basis and are of great significance to local authorities for planning and the allocation of resources. There is also considerable interest from academics in demographic research; as a result, the MYEs are considered to have a higher public interest profile.

PEU judges that an A1 level of assurance was appropriate for this data source for the purpose it is used for.

Population Projections Unit (PPU)

Northern Ireland international migration data is used by PPU for the production of national population projections (NPP).

The data are accredited National Statistics and fully quality assured at the time of supply. Given the low number of variables, the regular communication maintained between colleagues in ONS and NISRA in regards to data needs and quality and the fact that PPU use the data for the same purpose for which they have been accredited as National Statistics, there is deemed to be a low risk of quality concerns.

The NPP is used both within and outside government as the definitive set of population projection figures. Within government, it is used for important decision-making, such as planning the allocation of resources as well as being the basis for other official projections such as the subnational population projections (SNPP) and household projections. Outside government, NPP is widely used by academics in demographic research as well as other statistical agencies such as Eurostat for the production of their own population projections. As such, NPP are considered to have a higher public interest profile.

PPU judges that an A1 level of assurance was appropriate for this data source for the purpose it is used for.

Migration Statistics Unit (MSU)

MSU are responsible for publishing Long-Term International Migration (LTIM) estimates every year. Northern Ireland international migration data is a required component used for the production of LTIM in addition to other data sources such as the International Passenger Survey (IPS) and data from the Home Office.

The data are accredited National Statistics and fully quality assured at the time of supply. Given the low number of variables, the regular communication maintained between colleagues in ONS and NISRA in regards to data needs and quality and the fact that MSU use the data for the same purpose for which they have been accredited as National Statistics, there is deemed to be a low risk of quality concerns.

LTIM is considered to have a higher public interest profile due to media and government policy interest in migration statistics.

MSU judges that an A1 level of assurance was appropriate for this data source for the purpose it is used for.

6.2 Strengths and limitations

The biggest advantage of the medical card register is the fact that it is recognised by NISRA as the most comprehensive source of information that can be used to estimate migration flows for Northern Ireland. All persons who wish to make use of health services will be registered and the availability of unit record data allows for analysis at the small area level.

However, there are also a number of recognised limitations to data quality for the medical card register:

1. There is a recognised deficiency in the number of registrations and de-registrations from young adult males recorded by the medical card register; to account for this and reduce the risk to data quality, the age distribution of young adult males is adjusted to be similar to the young female age distribution.
2. There is an assumed lag between the arrival of a person into Northern Ireland and medical card registration. The assumed lag is a period of 3 months. For example, new registrations between October 2015 and September 2016 will be used for official estimates of migrations between July 2015 and June 2016. The same lag is assumed for people leaving Northern Ireland.
3. International emigration from Northern Ireland is estimated from de-registrations of medical cards. The results from previous research have shown that outflows are not fully captured by the de-registration from the medical card register, only around 3 in 5 people de-register from their family GP when moving abroad. De-registrations are currently scaled up by 67% as a result to account for this known deficiency.